PROJECT NUMBER: 1758
PROJECT TITLE: Tobacco Cell Wall Research
PROJECT LEADER: G. H. Bokelman
PERIOD COVERED: November, 1988

I. SIDESTREAM REDUCTION (B. Rogers, S. Tafur, G. Bokelman and S. Baldwin)

A. **Objectives**: (1) Prepare cigarette paper, acceptable both in appearance and porosity, on the pilot-scale paper machine at the University of Maine and (2) prepare and evaluate (for reduction in sidestream smoke) paper handsheets that contain coatings and/or inorganic fillers with different physical and chemical properties.

B. **Results**: Additional experiments were conducted using the paper machine in the Chemical Engineering Department at the University of Maine, which led to significant improvements in tightness, appearance and run-ability of the paper (1). Improvements in preparing a less permeable paper were attributable to use of a white water recirculation system (allowing us to recover fines) and utilization of a Claflin refiner, after the valley beater, which further reduced fiber weight length. The formation, and thus appearance, of the paper was greatly improved when an Impco screen (to remove clumps of long fibers) was inserted between the machine chest and head box. The run-ability of the paper was improved by the use of dual squirt trimmers on both sides of the paper web. By widening the gaps between the paper and the excess material on either side of it the frequency of breaks at the couch was markedly decreased. In our most successful run to date, a partial bobbin of cigarette paper was prepared with a porosity of 7 Coresta, a basis weight of 38.8 g/m^2 and a (Multifex MM) calcium carbonate content of 27.5%.

A laboratory scale coater was obtained and procedures were developed for sizing and coating. Handsheets prepared at the University of Maine in September and October were treated with potassium succinate, and cigarettes were made from them. Sidestream light extinction data are pending on these cigarettes.

Samples of low porosity, chemical free paper obtained from Kimberly Clark were treated with 5% potassium succinate and coated with four different samples of carboxy methylcellulose (CMC) containing different cations. Calcium, magnesium, potassium, and ammonium ions are present in these samples in full or partial substitution for the sodium ion. The CMC's were applied at a 0.5% level. Cigarettes made from these papers will be evaluated subjectively against pure sodium CMC.

A total of 21 samples of handmade cigarettes have been prepared from cigarette paper handsheets and submitted for single port sidestream light extinction measurements. These were primarily cigarettes made with papers with varying particle sizes of $CaCO_3$ at varying porosities. Cigarettes with papers made with $Mg(OH)_2$, dolomite and $MgCO_3$ were also submitted. Preliminary results continue to show that $MgCO_3$ looks promising for reduction of sidestream visibility.

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Work has begun to examine the use of "tobacco solubles" for producing cigarette paper which reduces sidestream visibility and possibly improves mainstream and sidestream subjectives. The initial research has involved producing aqueous extracts of ART tobacco at room temperature and by Soxhlet extraction.

C. **Plans**: In addition to the continuing preparation and evaluation of handsheets (with and without coatings) and handmade cigarettes, an evaluation will be made of the use of two head boxes to produce bilayer sheets on the paper machine at the University of Maine.

D. **Reference**:

1. Bokelman, G. H., memo to R. N. Ferguson, "Results from the November Trip to the University of Maine," November 15, 1988.

II. BLEND COMPOSITIONS OF PRIME AND SALEM LIGHTS (HONG KONG)

(G. Bokelman, J. Stimler and General Analytical)

A. **Objective**: Determine the blend compositions of Prime, a new cigarette produced by JTI for the Japanese market, and Salem Lights (Hong Kong).

B. **Results**: The blend composition of Prime was found to be very similar to those of SomeTime Lights (from JTI) and Marlboro Lights (Japan) (1).

Based on comparison with an earlier study, it appears that there are three **different** formulations of Salem Lights for the U.S., Japan and Hong Kong (2). The two brands marketed in Asia have increased contents of bright lamina and decreased contents of burley lamina and Oriental leaf compared to their U.S. counterpart. Not surprisingly, the Japanese version of Salem Lights has the highest stem content.

C. **Plans**: Preparation of an updated tobacco database, for use with future blend composition requests, is now in progress.

D. **References**:

1. Bokelman, G. H. and J. O. Stimler, memo to S. B. Nelson, III, "Blend Composition Analysis of Prime," November 17, 1988.

2. Bokelman, G. H. and J. O. Stimler, memo to Linda Vinson, "Blend Composition Analysis of Salem Lights (Hong Kong)," November 17, 1988.

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